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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,139	06/30/2003	Sanjay Ghemawat	0026-0029	3005

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EXAMINER

THAI, HANH B

ART UNIT PAPER NUMBER

2163

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,139

Applicant(s)

GHEMAWAT ET AL.

Examiner

Hanh B. Thai

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed 3/10/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 19-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/3/03 & 2/3/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is Non-final Office Action in response to the communication received on March 10, 2006.

Election/Restrictions

2. Amending claims 9-18 to depend upon claim 1 does not alter the grouping of the two inventions as identified. All claims presented in the amended status still set forth two patentable distinctive inventions. Moreover, claims 9-18 were not part of Group I as imposed in the earlier restriction requirement. As such, claims 9-18 are withdrawn from consideration as they remain drawn to a non-elected patentably distinct invention.

Group I comprising claims 1-8 and 19-27 is now presented for examination.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on December 3, 2003 and February 3, 2004 have been considered and entered into record. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-8 and 19-27 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility.

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Regarding claims 1, 8, 19, 26 and 27, each of the independent claims merely identifies or defines a data process in which to be manipulated without giving rise to a concrete, useful and tangible result. Thus, the claims are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Jindal et al. (US 6,324,580 B1).

Regarding claim 1, Jindal discloses a method for distributing data in a system that includes a plurality of servers, the method comprising:

- identifying ones of the servers to store a replica of the data based on at least one of utilization of the servers, prior data distribution involving the servers, or failure correlation properties associated with the servers (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60); and
- placing the replicas of the data at the identified servers (abstract; summary and col.4, lines 40-67).

Regarding claim 2, Jindal discloses the method wherein the identifying ones of the servers include: identifying underutilized ones of the servers as candidates to store the replicas of the data (abstract; summary and col.4, lines 40-67).

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Regarding claim 3, Jindal discloses the method wherein the underutilized servers are identified based on disk space usage below a determined amount (col.4, lines 40-67; col.5, lines 57-60; col.6, lines 32-46 and col.7, lines 11-47).

Regarding claim 4, Jindal discloses the method wherein the identifying ones of the servers include: identifying ones of the servers that have not been involved in a recent data distribution as candidates to store the replicas of the data (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60).

Regarding claim 5, Jindal discloses the method wherein the identifying ones of the servers includes: identifying system conditions that affect two or more of the servers, and identifying ones of the servers as candidates to store the replicas of the data based on the identified system conditions (col.4, lines 40-67; col.5, lines 57-60 and col.6, lines 32-46).

Regarding claim 6, Jindal discloses the method wherein a number of the replicas of the data stored by the servers is user-configurable (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60).

Regarding claim 7, Jindal discloses a system for distributing chunks in a network that includes a plurality of servers, comprising:

- means for selecting ones of the servers to store replicas of the chunks based on at least one of utilization of the servers, prior chunk distribution involving the servers, or failure correlation properties associated with the servers (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60); and
- means for storing the replicas of the chunks at the selected servers (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60).

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Regarding claim 8, Jindal discloses a file system, comprising:

- a plurality of servers that store replicas of chunks (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60); and
- a master ("central server", abstract) connected to the servers (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60), the master being configured to:
 - o identify one or more of the servers to store a replica of a chunk based on at least one of utilization of the servers, prior chunk distribution involving the servers, or failure correlation properties associated with the servers, and place the replicas of the chunk at the identified one or more servers (abstract; summary; col.4, lines 40-67 and col.5, lines 57-60).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 19-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jindal et al. (US 6,324,580 B1) in view of Narendran et al. (US 6,070,191).

Regarding claim 19, Jindal discloses a method for distributing chunks of data in a system that includes a plurality of servers that store replicas of the chunks, the method comprising:

- monitoring utilization of the servers (col.5, lines 57-60 and col.6, lines 56-64, Jindal);
- determining whether to distribute any of the replicas (col.6, lines 31-45 and 56-64, Jindal);

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- selecting one or more of the replicas to distribute based on the utilization of the servers (col.6, lines 31-45 and 56-64, Jindal);
- selecting one or more of the servers to which to move the one or more replicas (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal); and
- moving the one or more replicas to the selected one or more servers (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal).

Jindal, however, does not explicitly disclose the replicas. Narendran, on the other hand, discloses data distribution techniques for load-balanced fault-tolerant web access including redistributing replicated data from the failed server to achieve rebalance (see col.12, lines 12-38, Narendran). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize the redistributing or rebalance technique of Narendran to derive the invention as claimed. The motivation of doing so would have been to provide an efficient system that can obtain a maximum flow with a minimum cost of a network flow system (abstract of Narendran).

Regarding claim 20, Jindal/Narendran combination discloses the method wherein the utilization of the servers relates to an amount of free disk space available at the servers (col.5, lines 1-20, Narendran).

Regarding claim 21, Jindal/Narendran combination discloses the method wherein the selecting one or more of the servers includes: identifying underutilized ones of the servers as candidates to which to move the one or more replicas (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal).

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Regarding claim 22, Jindal/Narendran combination discloses the method wherein the underutilized servers are identified based on disk space usage below a determined amount (col.5, lines 1-20, Narendran).

Regarding claim 23, Jindal/Narendran combination discloses the method wherein the selecting one or more of the servers includes: identifying ones of the servers that have not been involved in a recent redistribution as candidates to which to move the one or more replicas (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal).

Regarding claim 24, Jindal/Narendran combination discloses the method wherein the selecting one or more of the servers includes: determining failure correlation properties associated with the servers, and identifying ones of the servers based on the failure correlation properties as candidates to which to move the one or more replicas (col.6, lines 28-51, Narendran).

Regarding claim 25, Jindal/Narendran combination discloses the method wherein the moving the one or more replicas includes: deleting the one or more replicas from one or more of the servers, and instructing the selected one or more servers to copy the one or more replicas from another one or more of the servers (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal).

Regarding claim 26, Jindal discloses a system for distributing data in a network that includes a plurality of servers that store replicas of the data, the system comprising:

- means for monitoring utilization of the servers (col.5, lines 57-60 and col.6, lines 56-64, Jindal);

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- means for selecting one or more of the replicas to distribute based on the utilization of the servers (col.6, lines 31-45 and 56-64, Jindal);
- means for identifying one or more of the servers to which to move the one or more replicas (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal); and
- means for redistributing the one or more replicas to the identified one or more servers (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal).

Jindal, however, does not explicitly disclose the replicas. Narendran, on the other hand, discloses data distribution techniques for load-balanced fault-tolerant web access including redistributing replicated data from the failed server to achieve rebalance (see col.12, lines 12-38, Narendran). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize the redistributing or rebalance technique of Narendran to derive the invention as claimed. The motivation of doing so would have been to provide an efficient system that can obtain a maximum flow with a minimum cost of a network flow system (abstract of Narendran).

Regarding claim 27, Jindal discloses a file system, comprising:

- a plurality of servers configured to store replicas of chunks of data (abstract; summary; col.5, lines 57-60 and col.6, lines 56-64, Jindal); and
- a master ("central server", abstract) connected to the servers, the master being configured to:
 - o select one or more of the replicas to distribute based on utilization of the servers (col.6, lines 31-45 and 56-64, Jindal),

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- identify one or more of the servers to which to move the selected one or more replicas (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal), and
- move the selected one or more replicas to the identified one or more servers (col.6, lines 31-45 and 56-64, and col.8, line 53 to col.9, line 27 Jindal).

Jindal, however, does not explicitly disclose the replicas. Narendran, on the other hand, discloses data distribution techniques for load-balanced fault-tolerant web access including redistributing replicated data from the failed server to achieve rebalance (see col.12, lines 12-38, Narendran). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize the redistributing or rebalance technique of Narendran to derive the invention as claimed. The motivation of doing so would have been to provide an efficient system that can obtain a maximum flow with a minimum cost of a network flow system (abstract of Narendran).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Bolosky et al. (US 5,867,657) disclose distributed scheduling in a multiple data server system.
2. Hacherl (US 6,324,571 B1) discloses floating single master operation,
3. Lumelsky et al. (US 6,463,454 B1) discloses system and method for integrated load distribution and resource management on Internet environment.

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4. Yoshida et al. (US 6,401,121 B1) disclose file server load distribution system and method.
5. Speeter (US 5,838,921) discloses distributed connection management system with replication.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh B. Thai whose telephone number is 571-272-4029. The examiner can normally be reached on 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hanh B Thai
Examiner
Art Unit 2163

April 26, 2006



ALFORD KINDRED
PRIMARY EXAMINER